

crassa, utrinsecus nervis 5–7 obsoletis, interdum in sicco supra leviter impressis, subtus tantum colore pallidiore notatis; petioli crassiusculi, supra canaliculati, 0.5–1 cm. longi; stipulae intrapetiolares parvi abrupte acuminati, cartilagineae, pallidae. Flores ut videtur albi, in sicco nigrescentes, in cymis bifloris axillaribus et terminalibus, interdum pedunculo brevi bracteis 4–8 per paria basi connatis parvis pallidis acuminulatis instructo suffultis; pedicelli 2–3 mm. longi; calyx late campanulatus, lobis brevibus late semiorbicularibus acuminulatis; corolla infundibuliformis, tubo 7–9 mm. longo intus supra medium et praesertim ad faucem piloso, lobis ovatis acutiusculis 4–5 mm. longis utrinque glabris; antherae basin loborum non attingentes, 2.5 mm. longae; filamenta brevia, glabra; stylus glaber, corollae lobis brevior. Fructus subglobosus, 6–7 mm. diam., ruber, calycis lobis brevissimis vix conspicuis coronatus et apice cicatricibus corollae et styli notatus, putamen 4 mm. diam., flavescens, laeve.

LIUKIU ISLANDS: Okinawa Island, Mt. Genka, March 6, 1917, *E. H. Wilson* (No. 8094.)

This evergreen shrub is interesting as representing a genus endemic to the Liukiu Islands, but it has no conspicuous characters in its general appearance and its flowers and fruits, which are probably produced throughout the year, are insignificant.

NEW SPECIES, VARIETIES AND COMBINATIONS FROM THE HERBARIUM AND THE COLLECTIONS OF THE ARNOLD ARBORETUM ¹

ALFRED REHDER

TAXACEAE ²

Taxus cuspidata Sieb. & Zucc. f. *aurescens*, forma nova.

A typo recedit foliis ramulorum juvenilium plus minusve luteis et statura humiliore.

Cultivated at the Arnold Arboretum. Type specimens collected October 30, 1919, preserved in the herbarium of the Arboretum.

This is the first variegated form known of the Japanese Yew. It is a low and apparently slow-growing plant with the leaves of the current year's growth colored deep yellow. The color is most pronounced on the more exposed branchlets; on most of the individual leaves and particularly on the lower ones the color passes into green toward their base and after the first season the whole leaf changes gradually to green. The plant has been secured from Japanese dealers who offer it as "*Taxus tardiva* yellow-variegated."

PINACEAE ³

Juniperus squamata Lambert f. *Wilsonii*, forma nova. — *J. squamata* Rehder & Wilson in Sargent Pl. Wilson II. 57 (1914), pro parte, non Lambert.

¹ Continued from p. 146.

² See also p. 51.

³ See also p. 52.

A typo recedit habitu erecto, ramulis brevibus congestis apice plerisque recurvis, foliis densissime imbricatis latioribus et paulo brevioribus, late lanceolatis vel ovato-lanceolatis 4–5 mm. longis et basi 1.5 mm. latis dorso vix sulcatis.

CHINA. Western Szechuan: neighborhood of Tachien-lu, alpine regions, alt. 3000–5000 m., July and September, 1908, *E. H. Wilson* (No. 985, in part); west and near Wên-chuan Hsien, moorlands, alt. 3000–4300 m. September, 1908, *E. H. Wilson* (No. 985, in part); west of Kuan Hsien, Pan-lan-shan, alpine moorlands, alt. 4000–4600 m., October, 1910, *E. H. Wilson* (No. 4085). Western Hupeh: Fang Hsien, Ta-pa-shan, moorlands and open rocky country, alt. 3000–3600 m., May 16, 1907, *E. H. Wilson* (No. 985, in part). Shensi: Tai-pei-shan, 1910, *W. Purdom*.

This is apparently only an ecological form which may pass according to altitude and exposure gradually into the typical prostrate form, but occasionally attains 2.5 m. in height. As cultivated at the Arboretum it looks very different from the typical form assuming the shape of conical bushes consisting of several stems close together with the short crowded branchlets usually recurved at the tips. The leaves are shorter and broader than in the type and more closely imbricate. The tree form, *J. squamata* var. *Fargesii* Rehder & Wilson, is easily distinguished, even as a small plant, by the longer and slenderer leaves and the upright or spreading tips of the branchlets. The plants in cultivation were raised from seed sent by E. H. Wilson from Wên-chuan Hsien and from Pan-lan-shan in western Szechuan in 1909 and 1911. A picture of this shrub will be found under No. 228 of the collection of Wilson's photographs and in his *Vegetation of Western China*, No. 265.

Picea glauca Voss var. *albertiana* Sarg. f. *conica*, forma nova.

A typo varietatis recedit habitu anguste conico, ramulis brevibus tenuibusque dense congestis in sulcis saepe sparse pilosis, foliis radiatim patentibus tenuibus 0.5–0.75 mm. crassis et circiter 1 cm. longis plerumque curvatis apice in mucronem longum attenuatis, perulis basilaribus gemmae terminalis non ciliatis.

Cultivated at the Arnold Arboretum, grown from seedling plants collected near Laggan, Alberta, in 1904 by J. G. Jack. Type specimens collected November 3, 1919, preserved in the herbarium of the Arboretum.

This very peculiar form of the Western White Spruce is of slow growth and forms dense bushes of narrow conical shape consisting of closely packed thin and short branchlets, which are light yellowish gray during their first year and glabrous or sparingly hairy in the furrows between the pulvini. The leaves are very different from the type and very characteristic; they are radially disposed around the stem, thin and slender, less than 1 mm. thick and 0.8–1.2 cm. long, narrowed into a long and slender spiny point and more or less curved; the four stomatiferous bands consists of 1–3 more or less interrupted lines and are not conspicuous. The winter buds are brown and but slightly resinous, the scales are usually rounded at the apex

and the basal scales of the terminal buds are acuminate, as characteristic in var. *albertiana*, while in typical *P. glauca* the scales are emarginate at the apex.

Picea glauca conica on account of its very characteristic habit and aspect promises to become one of the most favorite dwarf Spruces. Like other dwarf conifers it is easily increased by cutting so that it may become a common garden plant.

Picea mariana Brit., Sterns & Pogg. f. *ericoides*, forma nova. — *P. ericoides* Masters in Kew Hand-list Conif. 65 (1896), nom. nudum.

A typo recedit habitu humiliore late pyramidalis, ramulis flavo-brunneis, robustioribus apicem versus saepe glabrescentibus, foliis parvis 5–8 mm. longis, obscure cyaneo-viridibus nec glaucescentibus.

Cultivated at the Arnold Arboretum; received from the Roy. Botanic Gardens, Kew, in 1900. Type specimens collected April 5, 1917, preserved in the herbarium of the Arboretum.

This form of the Black Spruce forms a pyramidal bush loosely branched, of slow growth with short and slender light reddish or yellowish brown branchlets, the leading shoots glabrescent toward the apex. The leaves are less than one cm. long, of dull bluish green color and finely pointed. Our plant is undoubtedly the one enumerated by Masters as *P. ericoides*, as it was received from Kew under that name which is fairly descriptive of its appearance. It is of little ornamental value, which accounts for the fact that it has not been mentioned elsewhere nor described in horticultural literature.

LILIACEAE

Yucca flaccida Haworth var. *major*, comb. nov. — *Y. glaucescens* Haworth, Suppl. Pl. Succ. 34 (1819). — Sweet, Brit. Flow. Gard. I. t. 53 (1824). — *Y. orchioides* var. *major* Baker in Bot. Mag. ciii. t. 6316 (1887). — *Y. filamentosa* var. *Y. glaucescens* Baker in Jour. Linn. Soc. xviii. 228 (1880). — *Y. filamentosa* var. *Y. antwerpensis* hort. apud Baker, l. c. (1880). — *Yucca flaccida glaucescens* (Haworth) Trelease in Missouri Bot. Gard. Rep. xiii. 51, t. 12, fig. 2, t. 13–15, t. 17, fig. 1, t. 76, fig. 2, t. 79, fig. 2 (1902).

This variety differs from the type chiefly in the mostly broader, more glaucous leaves remaining upright a longer time, in its almost tomentose panicle and the attenuate petals. It is much cultivated in American gardens.

RANUNCULACEAE

Paeonia suffruticosa var. *spontanea*, var. nov. — *Paeonia suffruticosa* Rehder & Wilson, in Sargent, Pl. Wilson. i. 319 (1913).

A typo recedit foliolis ovatis vel late ovatis inciso-dentatis vel trifidis, basi rotundatis vel late cuneatis, 3–7 cm. longis, subtus ad nervos praesertim basin versus pilosis, floribus 10–12 cm. diam. roseis, petalis circiter 10, interdum staminibus petaloideis praeditis.

CHINA. Shensi: 50 li west of Yunan Fu, 1910, *W. Purdom* (No. 338); Tai-pei-shan, 1910, *W. Purdom* (sterile).

The wild form differs from the cultivated garden forms chiefly in the broader and smaller leaflets rounded or broadly cuneate at the base and pilose on the nerves beneath, particularly toward the base of the leaflets. It also produces suckers freely, while the cultivated forms do not sucker. From the nomenclatorial type of the species which is *P. suffruticosa* var. *rosea* Bailey it further differs in the smaller flowers with fewer petals, but a plant of the wild form introduced by Purdom into cultivation which has flowered in the garden of Professor C. S. Sargent had larger flowers and more petals than the wild specimens. The disk is very high and envelops the carpels entirely up to the stigmas.

P. suffruticosa Andr. f. *Anneslei*, comb. nov. — *P. Moutan Anneslei* Sabine in Trans. Hort. Soc. vi. 482, tab. (1826).

A form with purple, nearly single flowers which seem to come nearest to the wild form.

× *Paeonia Lemoinei*, nom. nov. (*P. lutea* × *suffruticosa*). — *Paeonia* “l’Espérance” Lemoine & Fils, Cat. No. 173, vii. (1909). — *P.* “La Lorraine” Lemoine & Fils, Cat. No. 182, tab. (1912). — Gard. Chron. ser. 3, lvii. 56, 68, tab. col. (1915).

This new hybrid was raised by V. Lemoine & Fils, of Nancy, about 1900 and “La Lorraine” flowered for the first time in 1904. The form “l’Espérance” may serve as the type of this hybrid which in general appearance and in foliage resembles *P. suffruticosa*, but the large flowers which measure up to 20 cm. across, are yellow and the 8–10 petals have a carmine blotch at the base; the filaments are red. “La Lorraine” has double yellow flowers with a salmon tinge when opening.

× *Clematis Morelii*, nom. nov. (*C. Simsii* × *texensis*). — *C. Pitcheri* × *coccinea* André in Rev. Hort. 1893, 376, tab.

A handsome hybrid intermediate between the parents, with campanulate flowers of violet-purple color, in shape resembling those of *C. Simsii*, but with sepals not so much recurved at the apex. It was raised before 1893 by F. Morel of Lyon, France.

Clematis florida var. *Sieboldii* Sweet, Brit. Fl. Gard. ser. 2, iv. t. 396 (1837). — Planchon in Fl. des Serr. v. t. 487 (1849). — *C. florida* var. *bicolor* Lindley in Bot. Reg. xxiv. t. 25 (1838). — *C. Sieboldi* Paxton in Paxton’s Mag. Bot. iv. 147, t. (1838). — Don apud Moore & Jackman, *Clematis*, 141, t. 16 (1872). — *C. florida* β *C. Sieboldii* D. Don apud Steudel, Nomencl. Bot. ed. 2, i. 379 (1841). — *C. bicolor* Bot. Mag. ex Steudel, l. c., pro. synonym.

A complete enumeration of the synonyms of this variety is given here, because in Bailey’s Standard Cyclopedia of Horticulture I had used the varietal name *bicolor* which has to give way to the older, but generally overlooked combination of Sweet.

Clematis patens var. *Standishii*, comb. nov. — *C. Standishii* Van Houtte in Fl. des Serr. xvi. 39 (1865), pro synonym. — *C. florida* var. *Standishii* Th.

Moore in Proc. Hort. Soc. Lond. III. 227, 280 (1863). — *C. Standishii* Th. Moore in Moore & Jackman, Clematis, 143 (1872).

This garden variety which is usually placed under *C. florida* is better referred to *C. patens* on account of the large flowers, the plumose style and the always ternate leaves.

× *Clematis violacea* DC. var. *rubro-marginata*, comb. nov. — *C. rubro-marginata* Jouin in Mitt. Deutsch. Dendr. Ges. XVI. 236 (1907). — *C. Flammula* var. *rubro-magrinata* Cripps ex Jouin, l. c., pro synonym.

This garden form is apparently of the same origin as *C. violacea* DC. which is considered a hybrid between *C. flammula* and *C. Viticella*; it differs in the whitish sepals bordered with reddish violet.

Clematis glauca Willd. var. *akebioides* f. *phaeantha*, f. nov.

A typo varietatis recedit floribus extus violaceis.

Cultivated in Highland Park, Rochester, N.Y. (type specimen coll. by W. L. J. Edson, Sept. 20, 1918, preserved in herb. Arnold Arboretum).

C. glauca phaeantha agrees with the narrow-leaved variety of *C. glauca* in all particulars except in the color of the flowers which is dull violet outside. The leaflets are oblong to oblong-lanceolate sparingly dentate or incised-dentate or occasionally entire; the sepals measure about 2 cm. in length and 6–7 mm. in width. Of the origin of this form nothing is known to me.

Clematis paniculata Thunberg var. *dioscoreifolia*, comb. nov. — *C. dioscoreifolia* Léveillé & Vaniot in Fedde, Rep. Sp. Nov. VII. 339 (1909).

This variety differs from the type in the generally ovate and cordate leaflets usually rounded and mucronate at the apex, those of the floral region often emarginate, and in their firmer somewhat fleshy texture, and in the broader, obovate-oblong or oblong sepals. The plant was first collected in 1908 by Taquet in hedges near Hongno on the island of Quelpaert, Korea, and described the following year as a new species by Léveillé & Vaniot who compared it only with *G. recta* L. and overlooked its much closer relationship with *C. paniculata*. It was introduced into cultivation in 1911 by M. L. de Vilmorin who also sent seeds to the Arnold Arboretum where it has proved an attractive climber, similar to *C. paniculata*, but apparently not quite as hardy, though with handsomer foliage of firmer texture.

SAXIFRAGACEAE

Philadelphus L.

Philadelphus rhombifolius, spec. nov.

Frutex; ramuli hornotini sparse pilosi, pallide brunnei, annotini cortice cinereo-brunneo vel cinereo sparse horizontaliter fissis persistente obtecti. Folia rhombico-ovata vel rhombico-elliptica acuta vel acutiuscula, basi late cuneata, 5–7 cm. longa, minute et sparse denticulate vel integra, supra glabra, intense viridia, subtus pallidiora, dense villosa, basi plerumque paribus nervorum duobus satis distantibus instructa; petioli 4–7 mm. longi, pubescentes. Racemi 5–9-flori, rhachi sparse hirsutula; par inferior florum in axillis foliorum et 1.2–2 cm. a superiore distans; pedicelli

3–5 mm. longi, pubescentes; calycis lobi ovati acuminati, extus ut tubus sat dense accumbenti-pilosi, intus apice excepto glabri, tubum paulo superantes; petala ovalia, 1.8–2 cm. longa, leviter erosa; stylus 7 mm. longus, staminibus longioribus brevior, apice tantum quarta parte divisus, glaber; stigmata parva, antheris breviora et angustiora.

JAPAN. Prov. Musasi, Chichibu, June 30, 1910, sine collectore (sub nomine *P. coronarius* var. *satzumi*).

This species seems very closely related to *P. pubescens* Loiseleur (*P. latifolius* Schrader) which differs chiefly in its larger, ovate, acuminate leaves usually rounded at the base, and dentate or denticulate, in the style usually divided to the middle and in the larger stigmas. It is apparently a rare species, as I have seen only one specimen and no Japanese botanist seems to have noticed this species which differs from all other Japanese *Philadelphus* in its pubescent calyx.

Philadelphus Gordonianus var. *columbianus*, comb. nov. — *P. Gordonianus* var. *californicus* Dippel, Handb. Laubh. III. 342 (1893). — *P. oregonus* Nuttall ex Torrey & Gray, F. N. Am. I. 595 (1840), pro synonym.; secundum Rydberg in Fl. N. Am. Fl. XXII. 166 (1905). — *P. Californicus* hort. ex K. Koch, Dendr. I. 344 (1869), pro synonym. — *P. columbianus* Koehne in Gartenfl. XLIV. 542 (1896). — Rydberg in N. Am. Fl. XXII. 166 (1905).

This variety differs from the type chiefly in its smaller leaves, those of the shoots with few coarse teeth, and in its smaller flower. As the first varietal name given by Dippel is a misapplied name being based on *P. californicus* hort., not Benth. and therefore not valid, a new combination is necessary.

Philadelphus subcanus Koehne var. *Wilsonii*, comb. nov. — *P. Wilsonii* Koehne in Sargent, Pl. Wilson. I. 4 (1911), 145 (1912).

This variety differs from the type only in its larger leaves, somewhat more reticulate beneath and in the larger inflorescence, and I cannot consider it specifically distinct from *P. subcanus*. Plants raised from seed of No. 4384 do not yet differ at all from *P. subcanus*, but they have not flowered here.¹

Philadelphus Delavayi L. Henry var. *calvescens* Rehder, var. nov.

A typo recedit foliis subtus glaucescentibus et tantum ad costam nervosque strigosis vel interdum fere glabris.

CHINA. Yunnan: in collibus prope Lichiang, versus occ., alt. 2900 m.,

¹ This and the two following species I refer to a new well-characterized group restricted to China which I place between the groups *Gordoniani* Koehne and *Coronarii* Koehne. It may be briefly described as follows:

Ser. *Sericanthi* Rehd., ser. nov. Cortex ramulorum brunneus, horizontaliter fissus, demum plus minusve exfolians: folia serrato-denticulata dentibus pronis, nunquam integra, subtus plus minusve pubescentia, raro glabra: flores subcampanulati in racemis 7–11-floris secundis: calyx plerumque pubescens vel glaber et violaceo-purpurascens; stylus staminibus brevior; stigmata antheris angustiora. — To this group the type of which is *P. sericanthus* Koehne belong besides the species mentioned the following: *P. Magdalenae* Koehne, *P. purpurascens* Rehd. and *P. venustus* Koehne. It is chiefly characterized by the denticulate-serrate leaves with the teeth pointing forward and by the nodding subcampanulate flowers.

July 18, 1914, *C. Schneider* (No. 1896, frutex ad 4 m., fl. albis); Tali Range, Lat. $24^{\circ} 40'$, alt. 9–10,000 ft., July, August, 1906, *G. Forrest* (No. 5036, in parte quoad specimina calyce glabro); Mo-tao-tsin, Kou-ty, circa Pe-yen-tsin, April 15, 1917, *Siméon Ten* (No. 469).

From typical *P. Delavayi* L. Henry which is also represented in our herbarium by cultivated specimens raised from Forrest's No. 2195 and by Schneider's Nos. 1529 and 1806 from Yunnan the new variety differs in the under side of the leaves which is pubescent on the veins only and glaucescent or nearly glabrous, while the upper surface shows the same pubescence as in the type, though somewhat less dense.

A peculiar form is Schneider's No. 3505 collected between Yungning and Yungpeh. In this form the leaves resemble the type, but the sepals are thinly strigose-pubescent, while the calyx-tube shows only a few scattered hairs or is nearly glabrous; the pedicels and rachis are glabrous as in the type. Thus it approaches *P. Henryi* Koehne, but in that species the young branchlets, the rachis and the pedicels are more or less pubescent and the calyx-tube is usually rather densely strigose, while the sepals are much less pubescent and sometimes nearly glabrous.

Philadelphus Henryi Koehne may possibly be only a variety of *P. Delavayi*, but it is easily distinguished by the pubescence of the branchlets and inflorescence, by the narrower leaves, the somewhat smaller flowers and by the less highly colored calyx. Of this species I have seen the following specimens from Yunnan: Mengtze, *A. Henry* (No. 10,749 B, type, No. 10,749); Yunnan-Fu, June 1, 1916, *O. Schoch* (No. 148); La-pa-ho, Tie-so, near Pe-yen-tsin, June 18, 1916, *Siméon Ten* (No. 195a); Tali Range, *G. Forrest* (No. 5032, No. 5036, pro parte, quoad specimen calyce pubescente). — Forrest's specimen differs from the type in the less pubescent calyx, the sepals and the upper part of the calyx-tube being often glabrous or nearly so; these specimens had been determined by Diels (in Not. Bot. Gard. Edinburgh, VII. 291, 292 (Pl. Forrest.) [1912]) as *P. nepalensis* Koehne which is a different not very closely related species, easily distinguished by the leaves being quite smooth and glabrous on both sides except a villous pubescence in the axils of the main nerves on the under side, and by the pale green quite glabrous calyx. Ten's No. 195a exhibits in regard to pubescence a tendency toward the opposite extreme; the young branchlets, the inflorescence and the calyx are densely grayish pubescent, and the leaves are thinly strigose pubescent on the whole undersurface; it differs also in the narrower ovate-lanceolate sepals. Schoch's No. 148 is almost intermediate between Ten's specimen and typical *P. Henryi*.

Philadelphus pekinensis Rupr. var. *dasycalyx*, var. nov. — A typo recedit praecipue calycibus extus pedicellisque strigoso-villosis. — Ramuli juniores glabri: folia elliptico-lanceolata, 3–5 cm. longa, glaberrima, subtus glaucescentia; petioli graciles, 3–6 mm. longi, purpurascens ut nervi foliorum; racemi 5–7-flori, satis densi; pedicelli 3–5 mm. longi: flores circiter 2.5 cm. diam.; sepala ovata, acuminulata; stylus apice circiter quarta

parte divisus et staminibus subaequilongus, stigmatibus quam anterae minoribus.

CHINA. North Honan: Hwei Hsien, Shansi border, June 19, 1919, *Joseph Hers* (No. 713).

This new variety is easily distinguished from the type by the calyx and pedicels being loosely covered with setose slightly appressed nearly straight or slightly curled hairs.

Philadelphus laxus Schrad. var. *strigosus*, comb. nov. — *P. inodorus strigosus* Beadle, Biltmore Bot. Stud. i. 159 (1902). — *P. strigosus* Rydberg in N. Am. Fl. xxii. 168 (1905).

The only difference I can see between *P. laxus* Schrad. and *P. strigosus* (Beadle) Rydb. of which I have seen the type specimen is the denser pubescence of the under side of the leaves.

The theory has been advanced that *P. laxus* is not an American plant, but of Chinese origin. I have, however, not yet seen a Chinese specimen referable to this species. Rydberg (l. c. 179) apparently misunderstood Koehne who does not say that he had seen Chinese specimens, but states that he received from Vilmorin specimens from cultivated plants raised from seed sent from China (see Mitt. Deutsch. Dendr. Ges. xiii. 79, 1904). Specimens from the same plant which I collected myself in 1901 in Vilmorin's Fruticetum at Les Barres, France, and sent to Koehne, bear in his own handwriting the note "Wilde Exemplare dieser Art habe ich nicht gesehen." There is probably a mistake somewhere regarding the origin of this plant. That such mistakes are likely to happen is shown by the fact that I collected in 1909 at the same place a *Philadelphus* marked *P. spec.* China No. 4619 which I am unable to distinguish from *P. Gordonianus* var. *columbianus*.

Philadelphus laxus is apparently a very rare species, though well known in cultivation for more than ninety years. The only wild specimens I have seen are one collected in Tennessee by Wilkinson (Gray Herb.) and two collected near Augusta, Georgia, one by C. S. Sargent, April 28, 1910, and one by T. G. Harbison, April 4, 1914 (No. 1448), while another specimen collected by Sargent near the same locality, on the cliffs of the Savannah River at the locks, on March 30, 1904, and one collected by Harbison at Calhoun Falls, Abbeville County, South Carolina, resemble *P. laxus* in their pubescence, but have the larger and broader leaves of *P. grandiflorus*.

Philadelphus floridus Beadle, Biltmore Bot. Stud. i. 160 (1902). — *P. speciosus* Rydberg in N. Am. Fl. xxii. 169 (1905), non Schrader.

I cannot agree with Rydberg in making *P. floridus* Beadle a synonym of *P. speciosus* Schrader. Koehne (in Gartenfl. xlv. 507) refers *P. speciosus* to *P. laxus* Schrader, and as the author's citation is followed by an exclamation point, I assume that he saw Schrader's type. I see no reason not to accept Koehne's identification, inasmuch as there is very little difference between Schrader's descriptions of the two species. The figures cited by Rydberg under his *P. speciosus* do not at all belong here; *P. speciosus* Bot.

Reg. pl. 2003 is either a very large-flowered form of *P. pubescens* or a hybrid between that species and *P. grandiflorus*, while *P. grandiflorus* Watson, Dendr. pl. 46 is apparently typical *P. pubescens* Lois. Both figures show racemose flowers and have not the slightest resemblance to *P. floridus*.

***P. floridus* var. *Faxonii*, var. nov.**

Frutex ramis gracilibus divaricatis: folia anguste elliptica vel elliptico-oblonga, acuminata, basi cuneata, 3.5–5 cm. longa, remote minuteque denticulata, plus minusve curvata et pendentia, supra glabra, subtus satis dense strigoso-pubescentia, ea surculorum ovata, basi fere rotundata, ad 8 cm. longa; pedicelli 3–5 mm. longi, ut calyx dense strigoso-villosi; styli stamina paulo superantes, apice ad quartam partem divisi, stigmatibus latis.

Plant in Hort. Chandler, Jamaica Plain, Mass., of unknown origin (type specimen collected June 28, 1907, by C. E. Faxon, preserved in the Arnold Arboretum herb.). — Also growing in the Arnold Arboretum from cuttings taken from the type plant.

This peculiar form suggests in its habit and in the shape and size of its leaves *P. laxus*, while in the pubescence of the calyx and of the under side of the leaves it agrees with *P. floridus*, though the hairs are more strigose than villous. It is hardly possible that it is a hybrid between these two species, as the plant was growing here before *P. floridus* was introduced into cultivation. It is more likely that the plant was brought from the South and represents a form of *P. floridus* approaching *P. laxus*.

HYBRIDS AND GARDEN FORMS

× ***Philadelphus verrucosus* Schrader var. *nivalis*, comb. nov.** — *P. nivalis* Jacques in Hort. Universel, II. 19 (1841).

This variety differs from the type chiefly in its exfoliating chestnut-brown bark; the leaves are generally smaller and less coarsely dentate. Jacques states that it was raised from seed of *P. latifolius* Schrad. (= *P. pubescens* Lois.), and he also says that seeds of *P. latifolius* and of *P. grandiflorus* rarely reproduce the typical parent form.

× ***P. verrucosus* var. *nivalis* f. *plenus*, comb. nov.** — *P. nivalis spectabilis plenus* Hort. — *P. coronarius*? *nivalis plenus* Schelle in Beissner, Schelle & Zabel, Handb. 128 (1903.) — *P. coronarius nivalis spectabilis plenus* hort. Spaeth ex Schelle, l. c., pro synonym. — *P. pubescens fl. pleno* hort. ex Schelle, l. c., pro synonym.

A form with double flowers.

× ***Philadelphus monstrosus* Schelle in Beissner, Schelle & Zabel, Handb. 129 (1903), nom. seminud.** — (? *P. Gordonianus* × *pubescens*). — *P. Gordonianus monstrosus* Hort. (*Gord.* × *latifolius*) Spaeth, Cat. No. 100, 95 (1897), nomen.

Tall shrub; bark of the previous year's branchlets grayish or light yellowish brown, close, with cross-cracks; young branchlets nearly glabrous: leaves ovate to ovate-oblong, usually rounded at the base, acuminate, 3–8 cm. long, remotely denticulate, very sparingly pubescent above,

densely grayish villous-pubescent beneath, leaves of shoots usually broadly ovate, with 4–8 broad and rather shallow teeth on each side: flowers 3–4 cm. across, in 5–13-, usually 7–9-flowered racemes 5–10 cm. long, usually the two lower pairs in the axils of leaves and rather remote; lower pedicels 3–5 mm. long, pubescent; calyx loosely pubescent outside; sepals oblong-ovate, acuminate; petals elliptic-oblong, rarely elliptic; style divided about $\frac{1}{3}$, shorter than the stamens; stigmas slightly shorter and narrower than the anthers.

Cultivated at the Arnold Arboretum as No. 6965 received from Spaeth's Nursery in 1911 as *P. Gordonianus monstrosus* (type specimen collected July 3, 1917, preserved in herb. Arnold Arboretum).—To this hybrid belong also plants received from Ellwanger & Barry, Rochester, N.Y., as *P. Zeyheri* in 1908, from Spaeth as *P. latifolius sanguineus*, from Hesse, Weener, Germany, as *P. Zeyheri* in 1910, from Kew Gardens as *P. cordifolius* in 1897.

This hybrid is similar to *P. verrucosus*, but differs chiefly in the lighter colored close bark, the longer racemes, oblong-elliptic petals, shorter pedicels; from *P. Gordonianus* it is easily distinguished by the pubescent calyx and from *P. pubescens* by the brownish bark, the smaller more coarsely dentate leaves and the oblong-elliptic petals.

× **Philadelphus congestus**, hybr. nov. (? *P. laxus* × *verrucosus* or *P. Gordonianus*).

Shrub with slender spreading branches; bark of last year's branchlets chestnut-brown, exfoliating; young branchlets strigose: leaves of flowering branchlets narrowly elliptic to elliptic-lanceolate, more or less curved and pendent, 3–4 cm. long, minutely and sparingly denticulate, sparingly strigose-pubescent beneath, those of the shoots elliptic-ovate, broadly cuneate at the base, 4–6 cm. long, coarsely dentate, strigose-pubescent on both sides, more densely so beneath, 3-nerved at the base; flowers about 3 cm. across, usually 5, rarely 3 or 7, in short and dense racemes about 3.5 cm. long; pedicels 2–4 mm. long, strigillose; calyx-tube strigose at the base and usually sparingly strigose along the 4 stronger ribs; sepals oblong-ovate, acuminate; petals oval; style shorter than stamens, divided about $\frac{1}{3}$; the stigmas longer and nearly as broad as the anthers.

Cultivated at the Arnold Arboretum under No. 5854, received from Spaeth's Nursery near Berlin, Germany, in 1908 as *P. inodorus speciosus grandiflorus*¹ (type specimen collected June 24, 1912, preserved in herb. Arnold Arboretum.)

In habit and in the shape and pubescence of the leaves this hybrid resembles *P. laxus*, but the racemose flowers, the rather coarsely dentate leaves and their more copious pubescence and the slightly pubescent calyx indicate the influence of *P. verrucosus*, or possibly of *P. Gordonianus* var. *columbianus*, but the latter would not explain the pubescence of the calyx. A form of apparently similar origin, but with larger flowers and

¹ According to Schelle (in Beissner Schelle & Zabel, Handb. 129) the plant of this name from "Hort. Spaeth" belongs to *P. umbellatus*.

larger leaves and with the style as long as the stamens is cultivated in the Harvard Botanic Garden.

Philadelphus coronarius f. *deutziaeflorus*, nom. emend. — *P. coronarius* var. *deutziaeflorus plenus* Hartwig, Ill. Gehölzb. 258 (1892).

A form with double flowers in 3–5-flowered racemes; petals elliptic-oblong to narrow-oblong, mostly acutish; pedicels glabrous: leaves villous along the veins near the base, otherwise glabrous. From the other double-flowered forms of *P. coronarius* this differs in its narrow mostly acutish petals.

× *Philadelphus Zeyheri* Schrad. var. *Kochianus*, comb. nov. — *P. Kochianus* Koehne, Dendr. 183 (1893).

This variety differs from the type chiefly in the longer style which exceeds the stamens. The pure white cup-shaped flowers are very handsome.

× *Philadelphus Zeyheri* var. *umbellatus*, comb. nov. — *P. umbellatus* Koehne, Dendr. 181 (1893).

This form differs from *P. Zeyheri* chiefly in the flowers being borne in 7–15-flowered cymes; the style is about as long or sometimes longer than the stamens: leaves glabrous beneath or villous only along the midrib. The cymose inflorescence is apparently derived from *P. grandiflorus* or *P. inodorus* which show the cymose character of their inflorescence by the presence of bractlets on the lateral pedicels.

× *Philadelphus polyanthus*, nom. nov. (? *P. insignis* × *Lemoinei*). — *P. Lemoinei multiflorus* Schelle in Beissner, Schelle & Zabel, Handb. 129 (1903).

Upright shrub; bark of the previous year's branches chestnut-brown, tardily exfoliating; young branchlets sparingly pubescent; leaves ovate, acuminate, rounded at base, 2–4, on shoots to 5 cm. long, remotely denticulate or entire, glabrous above, rather densely strigose-pubescent beneath, 3-nerved at the base; petioles about 5 mm. long, pubescent: flowers 3.5–4 cm. across in 7–9-flowered cymes or short panicles: calyx densely appressed-pubescent; calyx-lobes ovate, acuminate; petals oval; style shorter than the stamens, divided only at apex, with rather small connivent stigmas.

The type of this hybrid is "Gerbe de neige" (Lemoine, Cat. No. 124, VIII.) raised by Lemoine and distributed in 1893. Here belongs also "Pavillon blanc" sent out by Lemoine in 1896 or before, which differs chiefly in its smaller leaves and in the flowers being borne in 5–7-flowered racemes; the slender pedicels are 0.5–1 cm. long, with two bracts about the middle.

I have not used Schelle's varietal name for the binomial to avoid any confusion with *P. multiflorus plenus* hort., a double-flowered form of *P. coronarius*.

× *Philadelphus cymosus*, nom. nov. (? *P. grandiflorus* vel spec. affinis × *P. Lemoinei*).

Upright rather tall shrub; bark of two year old branchlets chestnut-brown exfoliating; young branchlets glabrous: leaves elliptic-oblong to elliptic-

lanceolate, acuminate, cuneate at the base, 5–8 cm. long and 1.5 to 3 cm. broad, on shoots to 10 cm. long and to 3.5 cm. broad, dentate with 4–8 teeth on each side, or denticulate, rarely entire, glabrous above, hairy beneath near the base and along the veins; petioles 4–8 mm. long, pubescent above or nearly glabrous; flowers large, 5–6 cm. across, in 3–9-flowered cymes or occasionally solitary, or in 5-flowered racemes with bracted slender pedicels to 1.5 cm. long, glabrous; calyx glabrous, its lobes about twice as long as the tube, ovate-lanceolate to oblong-lanceolate, long-acuminate; petals obovate; styles divided to the base, 1–1.3 cm. long, somewhat shorter or nearly as long as the stamens, with small stigmas.

As the type of this group of hybrids I have taken “Conquête” (Lemoine, Cat. No. 155, VIII. [1903]. — Fig. in Gartenwelt, XVII. 102 [1913]) raised by Lemoine and distributed in 1903. To this group I refer also the following hybrids: “Bannière” (Lemoine, Cat. No. 164, 24 [1906]), with ovate leaves and semidouble flowers. — “Mer de Glace” (Lemoine, Cat. No. 173, 25 [1909]. — Fig. in Lemoine, Cat. No. 176, pl. [1910]. — Gartenwelt XVII. 102 [1913]); with double flowers according to Lemoine, though the plant I have seen had single flowers. — “Norma” (Lemoine, Cat. No. 173, 33 [1909]) similar to the preceding with single or double flowers — “Nuée blanche” (Lemoine, Cat. No. 160, 20 [1905]) with the leaves sparingly pubescent beneath; said to be a hybrid of *P. microphyllus* and *P. nepalensis*, but I can see no influence of *P. nepalensis*. — “Rosace” (Lemoine, Cat. No. 158, VIII. [1904]), similar to “Conquête,” with double flowers according to Lemoine, but the plants I have seen had single flowers. — “Voie lactée” (Lemoine, Cat. No. 161, VII. [1905]. — Fig. in Garden, LXXXII. 267 [1918]. — Jour. Hort. Soc. XXXVIII. CXLV, fig. 117. [1912]. — Gardeners’ Mag. LV. 554 [1912]), with single flowers, similar to “Conquête” — “Perle blanche” (Lemoine, Cat. No. 146, XI. [1900]) with ovate, dentate leaves sparingly pubescent beneath and double flowers probably also belongs to this group, though the calyx is slightly pubescent.

× *Philadelphus virginalis*, nom. nov. (? *P. Lemoinei* or possibly *P. polyanthus* × *P. verrucosus plenus*).

Upright tall shrub; bark of last year’s branches brown, exfoliating; young branchlets glabrous; leaves ovate, acuminate, rounded or broadly cuneate at the base, 3.5–6, on shoots to 8 cm. long, dentate or denticulate, nearly glabrous above, villous-pubescent beneath; petioles 0.5–1 cm. long, pubescent; flowers about 5 cm. across, double or semidouble, in 5–7-flowered racemes; pedicels 0.5–1 cm. long, pubescent, with or without bractlets; the lower ones occasionally longer and 3-flowered; calyx pubescent, the lobes ovate, somewhat longer than the tube; style much shorter than the stamens, divided to the middle or nearly to the base, 6–8 mm. long, with small stigmas.

This group of hybrids is chiefly characterized by the ovate leaves, rather densely villous beneath and by the double racemose flowers with pubescent calyx. As the type I have taken “Virginal” (Lemoine, Cat. No. 174, 8

[1910]. — Fig. in Lemoine, Cat. No. 176, p. 26, t. [1910]; No. 179, pl. [1911]. — Gard. Chron. ser. 3, LXIV. 3, fig. [1918]. — Gard. LXXXII. 267 [1918]. — Rev. Hort. 1910, 408, 409). — Here belong also the following hybrids: “Argentine” (Lemoine, Cat. No. 190, 20 [1916], or before?) with scarcely exfoliating bark, smaller leaves rounded at the base and very double flowers usually in three’s. — “Glacier” (Lemoine, Cat. No. 190, 21 [1916], or before) with still smaller leaves and smaller double flowers in very dense 5–7-flowered racemes and with the calyx only thinly pubescent. — “Bouquet blanc” (Lemoine, Cat. 155, VII. [1903]. — Fig. in Jour. Hort. Soc. XXXVIII. CXLV. fig. 116 [1912]. — Gartenwelt, XVII. 101 [1913]). This is similar to the last named, but as the calyx is quite glabrous it may possibly be an offspring of *P. polyanthus*.

× *Philadelphus purpureo-maculatus* Lemoine, Cat. No. 152, VIII. (1902). — Bean in Bot. Mag. CXXXIV. t. 8193 (1908). — (*P. Lemoinei* × *P. Coulteri*). — *P. Lemoinei* var. *maculatus* Gard. Chron. ser. 3. XXXVI. 14 (1904).

Raised by Lemoine from seed of *P. Lemoinei* “Fantaisie” (Lemoine, Cat. No. 146, x [1900]), which is according to Lemoine a hybrid of *P. Coulteri* and *P. Lemoinei*. To this group of hybrids of which *P. purpureo-maculatus* is the oldest binominal belong the following forms: Étoile rose, Fantaisie (*P. phantasia* A. H. Moore), Nuage rose, Oeil de pourpre, Romeo, Sirène, Surprise and Sybille.

Fendlera Engelm. & Gray

The species of this interesting little genus characteristic of the upper Sonoran zone show great uniformity in their floral characters, but may be easily distinguished by their leaves.

Leaves ovate-oblong to narrow-lanceolate.

Leaves beneath sparingly strigose or nearly glabrous, rarely with scattered minute branched hairs, not revolute.

Leaves glabrous and smooth above, ovate-oblong to oblong-lanceolate, obscurely 3-nerved 1. *F. rupicola*.

Leaves more or less scabrid above, oblong-ovate to linear-lanceolate, mostly falcate, 1.5–4 cm. long, often strongly 3-nerved

2. *F. rupicola* var. *falcata*.

Leaves beneath densely covered with a tomentum of branched hairs and with strigose hairs, scabrid above, usually narrow-oblong, 1–2 cm. long, revolute 2. *F. Wrightii*.

Leaves linear, 1.5–2.5 cm. long and 1–1.5 mm. wide, coriaceous, strongly revolute, smooth or nearly smooth above 3. *F. linearis*.

1. *Fendlera rupicola* A. Gray in Pl. Wright. I. 77, t. 5 (except figs. 2, 6, 7) (1852). — *F. rupicola* var. *a Lindheimeri* A. Gray, 1. c.

TEXAS. Comal County: on perpendicular rocks on the upper Guadalupe above New Braunfels, March, 1851, *F. Lindheimer* (No. 506, flowers); 1850, *F. Lindheimer* (No. 257, old fruit); Comanche Springs, New Braun-

fels, May, 1850, *F. Lindheimer* (No. 792, fruit), March, 1851 (No. 793, flowers and fruit), 1851 (No. 794, fruit).

NEW MEXICO. Otero County: Sacramento Mts., Fresnal Canyon, August 24, 1916, *A. Rehder* (No. 420).

MEXICO. Sonora: Huchuarachi, December 6, 1890, *C. V. Hartmann* (No. 304).

Typical *F. rupicola* is characterized by its comparatively broad 1-nerved or faintly 3-nerved leaves quite smooth above and sparingly strigose beneath. It seems to have a rather restricted distribution, and has been found so far only in southwestern Texas and in southern New Mexico. By Wooton & Standley the plant of the Sacramento Mountains has been referred to the following variety, but the specimens I collected there seem nearer to the type. Hartmann's No. 304 from Mexico differs in its much narrower, linear-oblong to linear-lanceolate leaves.

F. rupicola var. *falcata*, comb. nov. — *F. falcata* Thornber in Contrib. U.S. Nat. Herb. xvi. 129 (1913).

NEW MEXICO. Sierra County: Tierra Blanca, 1904, *Mrs. Ida M. Beals*. Socorro County: slopes of San Francisco River north of Alma, August 12, 1914, *A. Rehder* (No. 276).

ARIZONA. Coconino County: Navaho Reserv., June, 1916, *C. T. Vorhies* (No. 80, Herb. Univ. Ariz.); Grand Canyon, 1894, *C. S. Sargent*, July 19, 1914, *A. Rehder* (Nos. 102, 111), June 16, 1916, *Alice Eastwood* (No. 5717).

COLORADO. Conejos County: Los Pinos, May 27, 1899, *C. F. Baker*, (No. 367: partly *F. Wrightii*). La Plata County: Durango, September 2, 1894, *C. S. Sargent*; October 7, 1911, *D. H. Andrews*, May 21, 1916, *Alice Eastwood* (No. 300). Montezuma County: Mancos, July 8, 1898, *C. F. Baker*, *F. S. Earle* & *S. M. Tracy* (No. 393); Dolores, June 17, 1892, *C. S. Crandall* (No. 199). Dolores County: August 14, 1896 (Biltmore Herb. No. 1565). Montrose County: Paradox, June 22, 1912, *E. P. Walker* (No. 162). Delta County: Oak Mesa, July 7, 1892, *J. H. Cowen*. Mesa County: Grand Junction, May 15, 1916, *Alice Eastwood* (No. 5107). ? Cerro Summit, June 17, July 12, 1901, *C. F. Baker* (No. 165).

This variety differs chiefly in its narrower and longer, often falcate leaves more or less scabrate above. Andrew's specimen from Durango and my No. 102 from the Grand Canyon show a slight covering of minute branched hairs on the under side of the leaves, as does also one branch of Miss Eastwood's No. 5300, while the leaves of the other branch are only strigose. This variety ranges from southwestern Colorado to northern Arizona and to Sierra County in western New Mexico.

2. *Fendlera Wrightii* Heller in Bull. Torr. Bot. Club, xxiv. 537 (1897). — *F. rupicola* var. β . *Wrightii* A. Gray, Pl. Wright. i. 77, t. 5, figs. 2, 6, 7 (1852). — *F. rupicola* Sargent in Gard. & For. ii. 112, fig. 98 (1889), non A. Gray. — Hemsley in Bot. Mag. cxxix. t. 7924 (1903). — *Edwinia*

Wrightii Heller in Bull. Torr. Bot. Club, xxiv. 477 (1897). — *F. tomentella* Thornber in Contrib. U.S. Nat. Herb. xvi. 129 (1913).

TEXAS. Valverde County: hills of Devil's River, *C. Wright*, July 25 (No. 728) and November 2–12, 1849 (No. 1381, marked also 228a in pencil.)¹ Jeff Davis County: Limpia Canyon, April 26, 1902, *S. M. Tracy* & *F. S. Earle* (No. 257, distributed as *Philadelphus serpyllifolius*). El Paso County: *C. Wright*, 1852 (No. 1049). Without locality, *C. Wright*, 1851 (No. 1099).

NEW MEXICO. Grant County: Mimbres, May, 1851, *G. Thurber* (No. 203); Mangas Springs, April 29, 1903, *O. B. Metcalfe* (No. 39); Santa Rita del Cobre, 1877, *E. L. Greene*; Knight's Station, April 5, 1877, *E. L. Greene*. Sierra County: Lookout Mines, August 11, 1904, *O. B. Metcalfe* (No. 1217). McKinley County: Fort Defiance, Dr. *E. Palmer*. ? Tendelero, April 5, 1880, *H. H. Rusby* (No. 22).

COLORADO. Conejos County: Los Pinos, May 23, 1899, *C. F. Baker* (No. 367, partly *F. rupicola falcata*). Montrose County: Naturita, May 12, 1914, *E. Payson* (No. 290).

ARIZONA. Cochise County: Bisbee, May 24, 1915, *J. I. Carlson*. Pima County: Santa Rita Mts., May 1, 1881, *C. G. Pringle*; near Tucson, August 4, 1892, *J. W. Toumey*; Santa Catalina Mts., Oak Camp, July 1, 1917, *Forrest Shreve* (No. 5326); ? Blue River, September 8, 1902, *A. Davidson* (No. 776); without precise locality, 1876, *E. Palmer*. Coconino County: Grand Canyon, May 24, 1903, *G. B. Grant* (No. 5737).

MEXICO. Chihuahua: mountains 25 miles south of San Diego Ranch, 1891, *C. V. Hartman* (No. 586); Chuichupa, September 15, 1899, *C. H. T. Townsend* & *C. M. Barber* (No. 424); Santa Eulalia Mts., April 20, 1885, *C. G. Pringle* (No. 22).

This species differs from *F. rupicola* chiefly in the peculiar irregularly branched hairs which form a grayish white tomentum on the under side of the leaves interspersed with long strigose hairs; the upper surface of the generally oblong leaves is more or less scabrid and the margins usually revolute. *Fendlera tomentella* Thornber I am unable to distinguish from *F. Wrightii*. This species ranges from southwestern Texas to southwestern New Mexico, southeastern and northern Arizona and to the province of Chihuahua in northern Mexico.

3. *Fendlera linearis*, spec. nov.

Frutex ramis gracilibus; ramuli hornotini dense puberuli, flavescentes, annotini obscure grisei, vetustiores cortice longitudinater rimoso leviter fungoso obtecti. Folia coriacea, subsessilia, linearia, mucronulata et acutiuscula, basi cuneata, 1.5–2.5 cm. longa et 1–1.5 mm. lata, supra nitidula, laevia vel parcissime pilis brevibus strigosis obsita, costa impressa, subtus ad costam elevatam et ad marginem parce strigosa, marginibus revolutis

The locality and the dates of Wright's Nos. 728 and 1381 are here given according to his field notes preserved in the library of the Gray Herbarium. A. Gray in *Plantae Wrightianae*, l. c., gives "crevices of rocks of the San Pedro River" as the locality. San Pedro River is another now obsolete name of the Devil's River.

costam dilatatam planam attingentibus et canaliculos duos clausos pilis ramosis albidis repletos formantibus. Flores in apice ramulorum 1-3 vel in racemis 5-floris; pedicelli 2-5 mm. longi, dense canescenti-puberuli; sepala triangularia, 4 mm. longa, late lanceolata, in fructu ovata, extus intusque tomentella ut tubus calycis; petala late obovata, unguiculata, apice rotundata, erosa, 7-8 mm. longa et 5 mm. lata; stamina sepalis breviora, dentibus filamentorum antheras superantibus, antheris 2 mm. longis, apice in appendicem subulatam fere 0.5 mm. longam productis; styli pilosuli, stamina subaequantes. Capsula ovoidea stylis persistentibus exceptis circiter 8 mm. longa, sepalis persistentibus reflexis paulo supra basin circumcincta.

MEXICO. Nuevo Leon: Sierra Madre near Monterey, June 17, 1889, C. G. Pringle (type in herb. Arnold Arboretum).

This new species is well characterized by its coriaceous linear leaves which show a peculiar structure; the margins are strongly recurved and touching the broad flattened midrib they form two closed canals filled with a dense white mass consisting of short, much and irregularly branched hairs similar to those of *F. Wrightii*; these hairs are not visible from the outside and only a cross-section reveals their presence as well as a well-developed continuous hypoderm under the epidermis of the whole upper surface and that of the midrib below. The flowers are smaller than in the two preceding species and borne usually in clusters of 3 or 5 at the end of the branchlets which are longer and not so regularly arranged as in the other species; the petals are roundish-obovate, not rhombic, the anthers smaller with a slender rather large appendage. This species marks the southern limit of the range of the genus.

Deutzia Thunb.

Deutzia scabra Thunberg.

The name *D. scabra* has been applied by different botanists to three different species; by some it has been identified with *D. crenata* Siebold & Zuccarini, by others with *D. Sieboldiana* Koernicke and by Maximowicz it was applied to a form named below *D. heterotricha*. Apparently none of the authors who dealt with this species has seen Thunberg's types, though Koernicke (in Gartenfl. xvi. 75) and Voss (in Gartenfl. xlv. 354) state that they had seen original specimens of Thunberg's from the herbarium at Stockholm, but as Thunberg's types are in Upsala, they could have seen only duplicates. The only way to solve the question seemed to be to get definite information about the specimens in Thunberg's herbarium of which there are three (see Juel, Pl. Thunberg. 290 [1918]). I therefore wrote to Professor Juel sending him leaves of the different species for comparison. Professor Juel very obligingly sent me detailed notes on the specimens accompanied by excellent photographs, which enabled me to determine the three specimens designated as α , β , and γ . The specimen designated as α consists of a flowering branch of *D. Sieboldiana*, β of a flowering branch of *D. crenata* and γ of a fruiting branch of the same species.

The form supposed by Maximowicz to be the true *D. scabra* is not represented in Thunberg's herbarium. The figure on plate 24 in Thunberg's *Flora Japonica* which is a reproduction of the original plate in his *Dissertatio Nov. Gen. Pl.* (1781) is not based on any single specimen, but apparently on a combination of all three. The leaves and flowers are taken from specimen β , the fruit from specimen γ , while specimen α seems to have been used only for the outline of the general habit of the branch.

Thunberg clearly based the generic and specific characters of *Deutzia scabra* on the specimen β and partly on γ ; this is particularly evident in the description of the filaments as "filaments . . . sub apice emarginata trifida" (*Fl. Jap.* 10), as they are in *D. crenata*, while in *D. Sieboldiana* they are subulate or abruptly contracted below the apex, but never trifid. Also other characters as "caulis arborescens orgyalis . . . folia petiolata, ovata, acuminata, . . . pedunculi et pedicelli angulati, tomentoso-scabra . . . petioli lineam longi" agree well with *D. crenata*, but not with *D. Sieboldiana* which is usually a low shrub, scarcely 1 m. tall, with, at least on the flowering branchlets, subsessile leaves, oval or broadly elliptic-obovate in outline and abruptly short-acuminate; the pedicles and peduncles are slender and usually pilose. Also the plate, as stated above, agrees in its characters with *D. crenata* and not with *D. Sieboldiana*; in representing the inflorescence as a simple raceme the artist took apparently only the upper part of the inflorescence which is described correctly by Thunberg as "pannicula composita."

Though according to botanical usage one might be inclined to consider the specimen designated as α as the type, I think there can be no doubt that in this case the specimen β is to be considered the type of the species, as Thunberg's description and the plate is based nearly exclusively on β and to a lesser extent on the conspecific specimen γ , while specimen α has apparently not entered at all into the description.

Deutzia heterotricha, nom. nov. — *D. scabra* Maximowicz in *Mém. Acad. Sci. St. Pétersb. sér. 7, x. No. xvi. 24, t. 2, figs. 1-18* (1867), non Thunberg. — *D. scabra* var. *Thunbergiana* Maximowicz, *l. c.* 45 (1867), nomen dubium. — *D. Sieboldiana* var. *c. Thunbergiana* Schneider in *Mitt. Deutsch. Dendr. Ges. xiii. 178* (1904).

JAPAN. HONDO. Prov. Shinano: Kisogawa, September 3, and Ogawa, September 4, 1905, *J. G. Jack* (fruiting); Otakegawa, thickets, common, June 10, 1914, *E. H. Wilson* (No. 6985); "Senano," *Tschonoski*, 1864, ex Maximowicz (type).

This species has been well described and figured by Maximowicz who took it for *D. scabra* Thunberg. In the appendix to his paper, however, he states that according to Koernicke *D. scabra* Thunberg is identical with *D. crenata* Sieb. & Zucc. and that he has come to the conclusion after seeing additional material that his *D. scabra* and *D. crenata* are not specifically different. He further says that only Thunberg's herbarium will show which one is the true *D. scabra*, and that Thunberg may not have distinguished

these two forms at all; he then proceeds to distinguish as var. *Thunbergiana* one of the forms, his *D. scabra*, which according to his opinion is *D. scabra* of Thunberg, and the other form as var. *crenata*. This clearly shows that Maximowicz gave the name var. *Thunbergiana* to his *D. scabra* only on the supposition that it represented typical *D. scabra* Thunberg, which is not the case as shown above under *D. scabra*, and therefore it can hardly be retained for his plant. Schneider later transferred Maximowicz's variety to *D. Sieboldiana*, but it is certainly much more closely related to *D. scabra* than to *D. Sieboldiana*. The Japanese botanists do not mention this form at all.

In general appearance *D. heterotricha* resembles *D. scabra*, but the hairs on the under side of the leaves of *D. heterotricha* are very different; the pubescence appears soft to the touch, as most of the hairs and particularly those on the veins and veinlets have a central upright ray, while the lateral rays are fewer than in *D. scabra* and on the veins are often nearly or entirely wanting; also the pubescence of the inflorescence is heteromorphous, the well-developed central rays giving the impression that the stellate pubescence was interspersed with long pilose hairs. The panicle itself appears nearly cylindric on account of the short lower branches which are usually only 3-flowered. The flowers are somewhat smaller, the stamens exceed the petals, and the longer filaments are indistinctly toothed or nearly subulate. It is chiefly the difference in the pubescence which induces me to consider this *Deutzia* a distinct species, as I have found the form of the pubescence a very constant and reliable character in this genus. *Deutzia heterotricha* seems to occur only in the province Shinano and Tschonoski's specimen represents the type of the species; the specimens from other localities cited by Maximowicz may not belong here. Another closely related species is the incompletely known *D. hebecarpa* Nakai (in Matsumura, Icon. Pl. Koisikav. 1. 127, t. 64 [1913]) from the island of Oki which differs according to the author's description and figure chiefly in the quite glabrous branchlets, the 3-4-rayed hairs of the upper surface of the leaves and the simple hairs of the lower surface, the pilose petioles and the pilose inflorescence and fruit, no mention being made of stellate pubescence except that of the upper surface of the leaves.

Deutzia calycosa Rehder var. *macropetala*, var. nov.

A typo recedit praesertim foliis subtus vix molliter pubescentibus ob pilos stellatos radio centrali instructus sparsiores, pilis praesertim versus marginem fere omnibus radio centrali destitutis, floribus majoribus petalis ad 15 mm. longis et 11 mm. latis, pilis stellatis calycis radio centrali destitutis.

CHINA. Yunnan: in silvis La-pa-ho, Tie-so, circa Pe-yen-tsin, Jun. 18, 1916, *Siméon Ten* (No. 195, frutex 3 m. altus, floribus rubro-albis).

This variety appears at the first glance quite distinct from *D. calycosa* on account of the larger flowers and the less villous pubescence of the under side of the leaves and of the calyx, but a closer examination reveals no strong

morphological differences. The most striking difference consists in the pubescence of the calyx which is quite destitute of central rays in the variety, while in the type it is nearly villous from the numerous spreading central rays. The central rays of the stellate hairs on the under side of the leaves which are well developed in the type, are less numerous in the variety and disappear toward the margin. In the length and shape of the calyx-lobes there is no difference. The petals are much broader, about 11 mm. broad, though scarcely longer than in the larger-flowered form of the type. The teeth of the outer stamens equal or exceed the anthers, while in the type they are shorter.

***Deutzia longifolia* Franch. f. *elegans*, forma nov.**

A typo recedit ramis gracilibus arcuatis paniculas numerosas satis laxas ramulos breves subaequilongos terminantes gerentibus corolla extus purpureo-rosea fere 2 cm. diam.

This handsome form of *D. longifolia* is characterized by slender arching branches studded almost their whole length with rather loose panicles of rose-purple flowers borne on short branchlets of nearly equal length; the panicles are about 5 cm. long and broad, and the flowers nearly 2 cm. across on pedicels 4–8 mm. in length. The flowering branchlets bear 3–4 pairs of lanceolate leaves 3–5 cm. long and 1–2 cm. broad and covered with a close white tomentum beneath; the leaves of the shoots are similar, but 7–11 cm. long and 2–3.3 cm. broad.

This is one of the handsomest forms of *D. longifolia*; the flowers are not as large as those of var. *Veitchii*, but the habit is more graceful, and the plant has proved hardier at the Arboretum than other forms of the species. It was raised from seed sent by Mr. Wilson in 1908 from Wa-shan in Szechuan. As a botanical form it is of little significance, but from a horticultural point of view it certainly is worth noting.

× *Deutzia Wilsonii* Duthie in Bot. Mag. cxxxii. t. 8083 (1906). — *D. discolor* × *mollis* Rehder in Sargent, Pl. Wilson. i. 20 (1911).

When I published my synopsis of the Chinese *Deutzias* in *Plantae Wilsonianae*, I only knew *D. Wilsonii*, which is based on a cultivated plant, from the description and the plate in the Botanical Magazine. Since then Mr. Wilson has collected specimens in the Veitchian Nursery from the type plant, and a plant received from Veitch is now growing at the Arnold Arboretum. A close examination of this material shows that *D. Wilsonii* is a hybrid of apparently the same origin as the specimen I described as *D. discolor* × *mollis*. At the first glance *D. Wilsonii* looks quite different; the flowers are much larger and have well developed anthers; the leaves are larger and in shape more like those of *D. discolor*, but the pubescence of the under side of the leaves shows the same intermediate character between that of *D. discolor* and *D. mollis*. The serration, too, of the leaves, the denser pubescence of their upper surface, and the shorter and stouter petioles show the influence of *D. mollis*. Still more clearly is the hybrid character of the plant shown by the aestivation of the flowers which is

partly imbricate and partly valvate; the sepals, too, are intermediate in shape between those of the two species. Probably the plants raised from seed sent by Wilson to Veitch in 1901 under No. 1254 were not quite uniform and may have represented different intergradations between the two parent species. The plant which is growing here, but has not yet flowered, differs from the specimen supposed to have been taken from the type plant, somewhat in the pubescence of the leaves, the central rays of the stellate hairs being less profusely developed than in that specimen.

***Deutzia parviflora* Bunge var. *ovatifolia*, var. nov.**

A typo recedit foliis ovatis basi rotundatis vel truncatis, breviter acuminatis, 3.5–6 cm. longis et 2–3.5 cm. latis argutius minutiusque serrulatis, corymbis satis densis 3–4 cm. diam, floribus flavescenti-albis.

CHINA. Chili: Weichang, 1909, 1910, *W. Purdom* (No. 40, in part); growing at the Arboretum from seed received under the same number; type collected June 3, 1918.

The typical form differs from this variety in its larger, usually elliptic-ovate to oblong leaves, more or less cuneate at the base and rather irregularly serrate with more spreading teeth, and in the larger and looser corymbs of pure white flowers. The new variety looks rather distinct with its smaller, ovate, broad leaves and the dense corymbs of creamy-white flowers. Purdom's No. 40 collected in different localities is not uniform and consists only of flowering specimens.

(*To be continued*)